Diagnosi differenziale di noduli polmonari: metastasi da carcinoma della mammella e tubercolosi polmonare

Differential diagnosis of lung nodules: breast cancer metastases and lung tuberculosis

Mauro Endri¹, Giuseppe Cartei², Fable Zustovich³, Francesco Saverio Serino¹, Ambrogio Fassina³

¹Department of Medicine, Operative Unit of Medicine 2, Azienda Ospedaliera Santa Maria degli Angeli, Pordenone City Hospital, Pordenone, Italy; ²IOV-IRCCS, Operative Unit of Oncology 1, Padova, Italy; ³Department of Diagnostic Medical Sciences and Special Therapies, Section of Pathology, University of Padova, Italy

INTRODUCTION

Lung tuberculosis may occur in elderly patients with cancer, lymphoproliferative disorders and other infections like HIV [1-4]. The presence of lung tuberculosis during chemo- or hormone-therapy for metastatic breast cancer is considered rare [5]. We observed an elderly patient who developed a relapse of lung tuberculosis during therapy with tamoxifen followed by exemestane because of breast cancer.

CASE REPORT

A 74-year-old woman presented in December 2001 with a lump in her right breast with thick retracted overlying skin. The patient had Karnofsky Performance Status of 100%, her quality of life was optimal according to QLQ EORTC 30/3, and she was a fully active international traveller. A mammography showed a nodular lesion 4.5 cm in diameter characterized by fimbriated borders, suggestive of breast cancer. Cytology showed cancer cells, and right radical mastectomy and lymphadenectomy was performed. Histology was: G2 infiltrating ductal carcinoma, oestrogen and progesterin receptors positive, c-erb-b2 negative, Ki67 10% positive with lymph node involvement (one metastasis in one lymph node of second level out of 14 total lymph nodes). Subjective symptoms, physical examination, chest X Ray, total body bone scan, abdomen and pelvis ultrasoundography were negative for metastases (M0). Thus the clinical stage was T4N1M0 (IIIB). After surgical resection, tamoxifen (20 mg daily per os) for 5 years and periodic follow-up was accepted by the patient.

In January 2004, a routine total body CT scan showed multiple bilateral nodular lesions in the lungs compatible with recurrence of breast cancer (between 5 mm and 8 mm). Markers were: Ca125 = 23.3 U/ml (Upper Normal Range [UNR]-35), Ca15.3 =12.8 U/ml (UNR-31.3), CEA=1.2 ng/ml (UNR 5). Therefore exemestane (Aromasin 25 mg daily per os) was the substitute for tamoxifen. In April 2004, a new total body CT scan allowed a partial remission to be evaluated (absence of new lesions, each lesion reduced >50%) and exemestane was continued. CEA was 1.2 ng/ml, Ca125 = 14.2 U/ml and Ca15.3 = 16.1 U/ml.

In September 2004, the CT scan disclosed a generally stable disease with the exception of a handful of nodes in the posterior segment of the superior lobe of the right lung (largest node 2 cm), the other lesions being unchanged (Figure 1).

Due to a positive history for tuberculosis, a CT scan guided percutaneous transthoracic fine needle aspiration cytology (FNAC) was performed; the material was smeared onto four slides, air dried for Giemsa and alcohol fixed...
for Papanicolau and one slide was immediately stained with Diff-Quick for Rapid On Site Evaluation (ROSE) [6]. Part of the material was fixed in RNA-later solution (Ambion). Cytology revealed the presence of a necrotic background with cellular debris, granulocytes, a few lymphocytes and plasmacells with occasional granulomatous aggregates of epitheliod-like large cells resembling giant Langerhans cells (Giemsa x400).

Figure 1 - CT scan showing increased nodular lesion in the posterior segment of the superior lobe of the right lung after specific chemotherapeutic treatment (white arrow).

Figure 2 - Fine Needle Aspiration Cytology (FNAC): granulomatous aggregates of epitheloid-like large cells resembling giant Langerhans cells (Giemsa x400).

Figure 3 - CT scan showing a marked decrease of tubercular lesion.

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Figure 3 - CT scan showing a marked decrease of tubercular lesion.

In the literature not only has association between breast cancer and tuberculosis been reported but also simultaneous concurrence of metastatic breast cancer, Hodgkin’s disease and tuberculosis [1-4, 7]. However, the simultaneous occurrence of breast cancer and tuberculosis is difficult to diagnose and treat, and often tuberculosis is unrecognized and its incidence in cancer patients remains low [8-11]. Tanaka and coworkers conducted a retrospective review in 52 patients with breast cancer and pulmonary nodular lesions, evaluating the nature of pulmonary lesions surgically resected [11]. In this study 25% of cases had histological diagnoses other than breast cancer: tuberculosis was present in only 3.8% (2/52) of patients. In our patient, correct diagnosis would have been difficult without the CT scan and without fine needle aspirate cytology. The increase in size of a lesion at the time of the decrease in size of most other lesions required a FNAC, also because a “mixed” cancer response to therapy is a well-known phenomenon.
The present case is a noteworthy example of the possible combination in the same organ of two distinct diseases. It is worth pointing out the possibility of pulmonary tuberculosis when CT scan shows marked increases of one or more lesions even without typical tubercular radiological features during anticancer therapies. Moreover, in recent years, fluorine-18-fluorodeoxyglucose (18 F-FDG) whole body positron emission tomography (PET) is routinely employed in the staging and follow-up of cancers. However, F18-FDG uptake is sometimes associated with non-cancer-related lesions. In particular, tubercular lesions are characterized by a F18-FDG uptake resulting in false positive [12, 13]. On the other hand, breast tuberculosis is often confused with metastases or carcinomas, in particular in cases which are poorly defined clinically. In the literature, case reports of breast tuberculosis have been widely described [14-17]. In these cases, histology remains the keystone in confirming the diagnosis [8, 9]. Thus, in differential diagnosis of pulmonary nodular lesions, in patients with cancer, the likely reactivation of tuberculosis even in people without tuberculosis symptoms should be borne in mind. In conclusion, we should be alert to re-evaluate the incidence of tuberculosis in cancer patients not only from endemic regions but also in patients from industrialised countries [4, 6].

**Key words:** breast cancer, metastases, pulmonary nodular lesions, tuberculosis.

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**SUMMARY**

In a follow-up a 74-year-old woman with breast cancer (clinical stage T4N1M0 at onset, treatment by surgical resection and tamoxifen) presented a combination of two distinct diseases in the lung: breast cancer metastasis and tuberculosis. A CT scan showed multiple pulmonary nodular lesions and in only one lesion fine needle aspiration cytology (FNAC) diagnosed tuberculosis. After specific antibiotic therapy, isoniazide and rifampin, a CT scan highlighted disappearance of tubercular lesion. Because occurrence of tuberculosis during chemo or hormone therapy for metastatic breast cancer is rare, the present case is noteworthy. Indeed, it is worth pointing out the differential diagnosis of pulmonary nodular lesions in patients with cancer and the possible reactivation of tuberculosis even in patients without specific symptoms, without typical tubercular radiological features.

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**REFERENCES**


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